

Project Title: Montana Asbestos-Safe Weatherization Demonstration Project

Background:

Each year, the Montana Department of Public Health and Human Services and its Human Resource Development Council (HRDC) weatherization agencies must deny weatherization services to at least 200 high-energy-burden Low Income Energy Assistance Program (LIEAP) recipient households due to the presence of asbestos-containing materials in their homes. Asbestos is found in these homes either as loose-fill insulation in attics; in pipe or duct insulation; or in certain wall, ceiling, and siding materials. Due to potential health and safety hazards to residents and weatherization workers, the U.S. Department of Energy (DOE) weatherization rules limit expenditures for asbestos removal and mitigation, effectively preventing weatherization agencies from weatherizing homes with vermiculite insulation containing asbestos or with other asbestos containing building materials that are friable or brittle and could potentially become airborne.

LIEAP was borne from the frustration of a number of weatherization agencies that had to walk away from homes with asbestos. Because Montana's HRDCs are unable to weatherize low-income homes with non-vermiculite ACM or vermiculite insulation, low-income residents therein are prevented from receiving the benefits of the federally-funded weatherization program. In addition, the house occupants may be exposed to on-going health hazards, specifically an increased risk of asbestos-related diseases. Because these homes cannot be weatherized and made more energy-efficient, potential energy savings—which can be as great as 24 percent of natural gas usage and 30 percent of electricity usage—are forfeited. These low-income residents are more likely to have higher energy bills, higher arrearages, increased potential for utility service terminations and/or homelessness, and a greater reliance on LIEAP with less opportunity to attain energy self-sufficiency.

Overview:

The Montana Asbestos Safe Weatherization Demonstration Project accomplished two important goals: 1) to provide much-needed weatherization in low-income homes with asbestos; and 2) to develop, test, and refine draft protocols for safely weatherizing homes with asbestos based on extensive asbestos testing and monitoring. After the presence of asbestos was confirmed via bulk sampling in individual homes, the homes were tested for asbestos fibers in the living spaces before being fully weatherized.

The project weatherized 37 homes, less than was originally anticipated. The most significant factor influencing the lower number was the number of homes that needed cleaning either prior to weatherization or after weatherization. This added significantly to the average cost to weatherize a house.

The original project work plan called for eliminating all homes from the project that were contaminated with asbestos above acceptable background levels, as determined by baseline testing. However, due to difficulty in finding participant homes, a licensed asbestos abatement contractor was hired to clean asbestos from some of the homes in order to allow the homes to continue in the project. Of the 37 homes weatherized, 22 required pre-weatherization asbestos decontamination cleaning. Costs for this asbestos cleaning ranged from \$2,000 to \$4,675 per house. The average cost was \$3,400 per house.

District XII Human Resource Development Council in Butte volunteered to have their staff trained to perform asbestos work. Five of the HRDC's staff received a week of asbestos training by a state-certified trainer and are now certified as asbestos contractor supervisors.

Project results revealed that performing weatherization measures has the potential to disturb asbestos-containing materials and disperse asbestos fibers into the living space. This presents a risk to weatherization workers and home occupants. The majority (79% and 67%, respectively) of high-volume air and personal breathing zone air samples from this study did not reveal detectable airborne concentrations of asbestos. However, enough test samples did reveal detectable concentrations that careful consideration should be given when performing weatherization work in homes with asbestos. Significantly, airborne asbestos was detected during numerous weatherization measures, suggesting

that weatherization practices as a whole, not single weatherization activities, may contribute to the disturbance and dispersal of asbestos fibers into the air.

Other significant findings include:

- Baseline surface sampling revealed that the living spaces of the majority of homes in the study were contaminated with asbestos above acceptable background levels.
- The majority of participating homes with asbestos in either vermiculite or thermal system insulation needed to be cleaned for asbestos before weatherization activities began.
- The significant additional costs associated with weatherizing homes that contain asbestos in vermiculite or thermal system insulation are for asbestos testing and cleaning the living spaces.
- Testing of a limited number of wall cavities suggests that when a house has asbestos siding, the wall cavities will be contaminated with asbestos.
- There is a 2- or 2-day wait for Transmission Electron Microscopy (TEM) sample lab results. This added significantly to the length of time the occupants were required to be out of their house.
- When homes contained both vermiculite-containing asbestos from Libby, MT, and thermal system insulation containing asbestos, living space contamination was almost always of the type associated with thermal system insulation.
- The living spaces of several houses were contaminated with chrysotile asbestos, despite no source of chrysotile asbestos being identified in the home.
- Keeping occupants from re-entering their homes prior to final clearance, despite their signed agreements to do so, was a major problem and will be a major logistical challenge with asbestos home weatherization efforts in the future.
- Weatherization agencies should use caution if they choose to blow wall insulation in homes with asbestos. Blowing wall insulation clearly has the potential to add asbestos fibers to living space air, regardless of the location and type of asbestos.

The Asbestos Safe Weatherization Protocols developed for this project include the following actions that are not currently included in weatherization practices:

- A comprehensive asbestos survey of the home
- Bulk sampling (already performed by some agencies) of all identified materials that potentially contain asbestos
- Baseline testing of potential living space contamination
- Cleaning homes where baseline testing reveals asbestos contamination above acceptable background levels
- Requiring house occupants to vacate house for the period of weatherization work from when the initial blower door test is conducted until the results of a satisfactory clearance test are known
- Removal and appropriate cleaning or disposal of belongings stored in areas contaminated by asbestos, commonly attics, basements, and crawlspaces
- Personal breathing zone air sampling for weatherization workers
- Pre-blower door test attic bypass sealing
- Blower door test performed under positive pressure
- Prior to drilling the walls for an interior wall insulation blow-in, the condition of the interior walls should be evaluated to ensure that they will be able to withstand the pressure created in the wall cavity
- Construct containment areas inside house if an interior wall insulation blow-in is to be performed
- Final asbestos clearance test

While the DOE Weatherization Assistance Program does not forbid states and weatherization agencies from working in homes with asbestos, there is a general understanding that expenditures for asbestos must be very limited. Unfortunately, the protocols recommended in this study call for testing and, when necessary, cleaning of homes that would in all likelihood exceed the Weatherization Assistance Program guidelines.

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